

BEFORE THE
ILLINOIS COMMERCE COMMISSION

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|------------------------------------|---|--------------------|
| COMMONWEALTH EDISON COMPANY |) | |
| |) | Docket No. 94-0065 |
| Proposed General Increase in Rates |) | |

REBUTTAL TESTIMONY OF EDWARD C. BODMER

On Behalf of
THE CITY OF CHICAGO

July 27, 1994

CITY 069576

Rebuttal Testimony of Edward C. Bodmer

1

2 **Q. Please state your name and business address.**

3 **A. My name is Ed Bodmer. My business address is 205 North Michigan Avenue,**
4 **Chicago, Illinois.**

5 **Q. Have you previously presented testimony in this proceeding?**

6 **A. Yes. I have previously presented my qualifications and direct testimony in this case**
7 **on behalf of the City of Chicago.**

8 **Q. What is the purpose of your rebuttal testimony?**

9 **A. In this testimony I address the street lighting and residential rate design proposals**
10 **made by Mr. Lazare of Commission Staff ("Staff") and other intervenor witnesses, as**
11 **well as the rebuttal rate design testimony of Commonwealth Edison Company**
12 **("Edison") witness Arlene Juracek. In addition, I comment on the cost-of-service**
13 **rebuttal testimony of Edison witness Dennis Kelter.**

14

I. STREET-LIGHTING

15 **Q. Summarize your understanding of the proposals recommended in this case**
16 **related to street lighting rates.**

17 **A. Dr. Swan, testifying for the Federal Executive Agencies ("FEA"), proposes that Rates**

1 23 and 26 receive the same overall increase as residential customers, while all other
2 street lighting customers receive the same increase as Rate 6 and interruptible rate
3 customers. Staff recommends that Rates 23 and 26 customers get an increase of
4 13.70%, while other street lighting customers get a 2.66% increase. Both alternative
5 proposals recognize the current inequity in recovery levels between Rates 23 and 26
6 (93.82%) and all other street lighting rates (126.32%). Edison Exh. 29.1.

7 Edison initially proposed the same percentage increase for all street lighting
8 customers. In rebuttal, Edison suggests the possibility of "some broadening of the
9 EPMC constraints . . . depending on the final amount of increase granted." Edison
10 Exh. 28, at 26. That is, only if Edison receives less than it requested would it seek
11 to equalize recovery levels for the street lighting subclasses. Edison does not provide
12 the details of how this equalization would be accomplished if its revenue request is
13 reduced.

14 I recommended in my direct testimony that street lighting be reviewed on an intra-
15 class basis and that the dramatic difference in revenue recovery levels for Rates 23
16 and 26 compared with other street lighting categories be dealt with affirmatively. The
17 necessary rate changes would be consistent with an objective Edison expressly
18 accepted in its rebuttal testimony, equal percentage of marginal cost recovery within
19 customer classes. Edison Exh. 28, at 19-20, 22.

1 Q. Does Edison's recommendation to address street lighting cost recovery disparities
2 through any difference between its requested and granted revenue levels mitigate
3 the inequity in this rate class?

4 A. No. At Edison's proposed rates, the "all other lighting" subclass recovery level is
5 26.32% above the system average. That is a higher recovery percentage relative to
6 marginal costs than for any class except interruptible rates. Moreover, under
7 Edison's proposal, Rates 23 and 26 customers have one of the lowest recovery levels
8 of any rate subclass. There is no justification for perpetuating the current inequitable
9 rate relationships. To mitigate this inequity no rate increase should be granted for the
10 "all other lighting" subclass in this case, regardless of the revenue requirement
11 granted to Edison.

12 **II. REBUTTAL TO PETER LAZARE ON RATE DESIGN**

13 Q. Mr. Lazare proposes that Edison's current discount for high use in non-summer
14 months be increased. Is his proposal consistent with the principles of equity and
15 efficiency?

16 A. No. While Mr. Lazare's rate design includes certain positive attributes (a summer
17 inverted energy charge and reduced customer charges), his recommendation to
18 increase the discount for high energy usage in non-summer months (a steeper
19 declining block) is very seriously flawed in terms of equity and efficiency. Mr.
20 Lazare's proposal to increase Edison's non-summer discount by 7.4% (lowering the

1 tail block per kWh rate from 8.271¢ to 7.664¢) is inconsistent with cost-based rate
2 design, intra-class equity and recent expressions of Commission policy.

3 Although Mr. Lazare acknowledges that Edison's proposal to moderate the declining
4 block "lowers intra-class subsidies for the residential class" (Staff Exh. 9, at 56), he
5 asserts, inconsistently, that moderation of the discount for high use "does not
6 effectively align rates with marginal costs." Mr. Lazare also claims that a steeper
7 discount for high non-summer use somehow encourages efficient electricity use.

8 Mr. Lazare's proposal to discount rates for high use in non-summer months
9 demonstrates a fundamental misunderstanding of marginal cost pricing, reveals a lack
10 of familiarity with Edison bill distributions within the residential class, and fails
11 entirely to address the intra-class subsidies from low- and moderate-use customers to
12 high-use customers. Furthermore, his proposal directly violates rate design criteria of
13 the Public Utility Regulatory Policy Act ("PURPA"), and it results in excessive
14 burdens for low income customers.

15 **Q. Explain the first point you make, that Mr. Lazare's proposal for a steeper**
16 **declining block rate contradicts fundamental marginal cost pricing principles.**

17 **A.** First, it is helpful to recall the context of Mr. Lazare's proposal. Edison's cost-of-
18 service study shows, and Mr. Lazare does not dispute, that non-summer costs of
19 serving the residential class are the same for all usage levels. Despite this fact, Mr.

1 Lazare proposes to increase the volume discount in the residential rate structure.

2 Mr. Lazare's suggestion is that some residential customers should enjoy marginal
3 energy prices that are close to marginal costs while other customers face much higher
4 marginal prices. Under Mr. Lazare's distorted theory of marginal cost pricing, if you
5 are efficient in consuming electricity and you use less than 400 kWh per month, you
6 will face a much higher marginal price than if you are careless and use more than 400
7 kWh per month. Mr. Lazare treats marginal cost pricing as an end in itself, rather
8 than a guide to rate design. Absolute adherence to marginal costs is not possible if
9 approved rates are to recover embedded cost revenue requirements. Mr. Lazare
10 selectively ignores the revenue requirement constraint to argue for rates for high-use
11 customers that are below the recovery level of all other residential customers' rates.

12 This Commission has consistently required that deviations from marginal cost based
13 rate structures should be justified and not assigned arbitrarily to certain groups of
14 customers. No such justification has been shown here. Mr. Lazare's proposal, in
15 fact, would discriminate in favor of high-use customers, even though there is no
16 evidence that high-use customers have lower marginal costs than low-use customers.
17 To the contrary, Edison's cost-of-service study, with or without my recommended
18 adjustments, demonstrates that low-use customers have lower costs than high-use
19 customers.

Edison's billing distributions can be used to gauge the discriminatory impacts of Mr. Lazare's proposal. This simple analysis would have shown Mr. Lazare that under his proposal most non-space heat customers will not benefit from the discount he proposes. For example, less than one in five multi-family customers use enough electricity in a month to have an opportunity to enjoy Mr. Lazare's discount. Moreover, Mr. Lazare's proposal perpetuates existing inequities among residential class usage and geographic subgroups. If Mr. Lazare wants marginal prices to move closer to marginal costs, there are far more creative and equitable means of achieving that objective than regressing to steep discounts for high usage.

Table R-1 shows the portions of various residential class subgroups who use an average less than 400 kWh per month that will not benefit from Mr. Lazare's declining block proposal.

TABLE R-1
Percentage of Customers Excluded From Lazare's Discount

| Single-family Outside Chicago | Multi-family Outside Chicago | Single-family Inside Chicago | Multi-family Inside Chicago |
|----------------------------------|---------------------------------|---------------------------------|--------------------------------|
| 37.8% | 88.84% | 47.50% | 83.68% |

Q. Why is Mr. Lazare's proposal inconsistent with the pricing criteria established by PURPA?

A. PURPA includes a provision which prohibits electric utility companies from discriminating against low-use customers and encouraging inefficient use of electricity

1 through declining block rates that are not cost-justified.

2 **DECLINING BLOCK RATES**

3 The energy component of a rate, or the amount attributable to the energy
4 component in a rate, charged by any electric utility for providing electric service
5 during any period to any class of electric consumers may not decrease as kilowatt-
6 hour consumption by such class increases during such period except to the extent that
7 such utility demonstrates that the costs to such utility of providing electric service to
8 such class, which costs are attributable to such energy component, decrease as such
9 consumption increases during such period. 16 U.S.C.A. § 2621(d)(2).

10 Prior to Docket No. 90-0169, where a separate space heating rate was implemented
11 for Edison, one could argue that space heating customers with high non-summer
12 usage and good coincident load factors create a situation where non-summer marginal
13 costs decline with increased energy usage. However, with implementation of a
14 separate residential space heating rate, there is absolutely no evidence that marginal
15 costs decline at high levels of non-summer energy usage for non-space heating
16 residential customers. Under current circumstances, the fact that non-summer
17 marginal costs do not decrease as energy usage increases means that Mr. Lazare's
18 declining block proposal directly violates the PURPA standard.

19 **Q. How does Mr. Lazare's proposed rate design affect existing intra-class subsidies**
20 **among residential customers?**

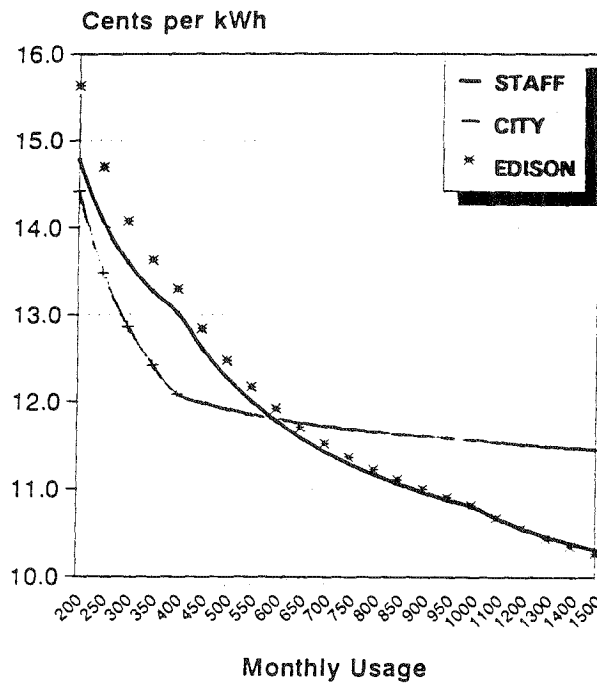
21 **A. Mr. Lazare asserts that his proposed energy charges accomplish the objective of**
22 **reducing intra-class subsidies. Staff Exh. 9, at 57. Mr. Lazare's statement and his**

1 residential rate design proposal suggest strongly that he does not understand the
2 causes of the residential intra-class subsidies and that he has not analyzed residential
3 intra-class equity.

4 Figure R-1 displays the revenue per kWh effects of Edison's proposed design, my
5 proposed design¹ and Mr. Lazare's proposed design across usage levels. As the
6 graph illustrates, Mr. Lazare's and Edison's residential rate design proposals have
7 similar impacts across usage levels and impose the same burdensome recovery levels
8 on low-use, often low income, customers. Further, that common structure is
9 dramatically outside the mainstream of other large utility rate designs.

10 ¹ Though the differences are relatively insignificant, I note that the structure used in Figure
11 R-1 is my revised residential rate structure explained in this rebuttal testimony, not my original
proposal.

FIGURE R-1
Revenue per kWh at Edison Requested Revenue Levels

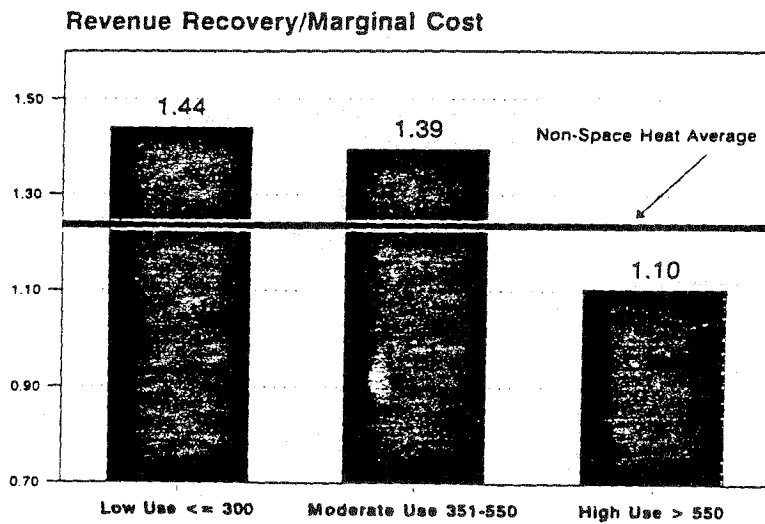


The high revenue per kWh levels for usage levels below 400 kWh is due to Edison's customer charge

- 1 The intra-class subsidies (recovery relative to marginal cost) inherent in Mr. Lazare's
- 2 proposal are illustrated in Figure R-2. That graph illustrates that Mr. Lazare's
- 3 proposal produces significant disparities in cost recovery between low- or moderate-

1 use and high-use residential customers.² City Exhibit (ECB) 5.1 details how Mr.
2 Lazare's residential rate design results in significant intra-class inequities between
3 low-use and high-use customers, City and outside City customers, and single-family
4 as opposed to multi-family customers.

Figure R-2
Intra-Class Inequity in Staff's Rate Design



² Figure R-2 is based on my adjusted cost-of-service study. Mr. Lazare's cost-of-service study would result in far more pronounced subsidies, but many of his cost adjustments are not credible.

II. REBUTTAL TO ARLENE JURACEK

1
2 **Q. In her rebuttal testimony, Edison witness Arlene Juracek voices Edison's**
3 **commitment to achieving EPMC recovery within the residential class. Is that**
4 **commitment reflected in Edison's residential rate proposals in this case?**

5 **A. Unfortunately, it is not. Ms. Juracek states that Edison is "committed to the principle**
6 **we share with the City . . . that the multi-family subclass should not be required to**
7 **pay more (on an EPMC basis) than the single-family subclass." Edison Exh. 28, at**
8 **22. I commend Edison and Ms. Juracek for the commitment to eliminating**
9 **inequitable subsidies within the residential class. I agree that the principal difference**
10 **between the City's position and Edison's position on residential rate design appears to**
11 **be the pace at which we propose to accomplish that common objective.**

12 In my opinion, the commitment to elimination of intra-class subsidies must be
13 addressed with urgency for several reasons. First, though Ms. Juracek asserts that
14 Edison is "committed to sponsoring additional cost-justified movement in the next
15 general rate case," that promise could leave the acknowledged intra-class inequities in
16 place for a number of years. Moreover, Edison's testimony leaves open the
17 possibility of another partial remedy in its next case, further delaying elimination of
18 unequal recovery burdens within the residential class.

19 Second, though the inequities at issue are serious -- they fall most heavily on efficient

1 users and low-income customers, groups that should not be punished -- they are not
2 so massive that they cannot be remedied expeditiously. If Edison were restrained
3 from meeting its commitment only by possible rate impacts, Ms. Juracek could have
4 proposed something like a phase-in over a couple of years. A phase-in could assure
5 customers, now, that the inequities would be eliminated by the order in this case,
6 without undue rate impacts. In addition, if Edison receives less than its requested
7 revenues, more movement toward intra-class equity could be made, since rate impacts
8 would be mitigated.

9 Finally, because the current intra-residential class deviations from EPMC amount to
10 inequitable surcharges on low-use/low-income customers least able to bear the burden,
11 a leisurely pace is inappropriate. In other words, the unnecessary continuation of
12 current deviations from intra-residential EPMC is tantamount to a Commission-
13 approved tax on low-use/low-income Edison customers.

14 Q. Discuss Ms. Juracek's assertion that your testimony contains "a number of
15 computational errors."

16 A. After my direct testimony was filed, I had discussions with representatives of
17 Edison's rate department about suggested revisions to my analysis. Edison requested
18 that I consider the following items for rebuttal testimony:

- 19 1) Check my residential rate design to assure that the rates collect the
20 requested revenues (Edison suggested that my rate design only collected
21 99.2% of its requested residential revenue requirement.);

- 1 2) Redesign the space heating portion of residential rates so that customer
2 charges are consistent between space heating and non-space heating
3 customers; and
- 4 3) Adjust calculation of the replacement cost of meters and services to
5 include (a) an after-tax discount rate rather than a pre-tax rate, (b) an
6 inflation adjustment and (c) an infinity analysis.

7 In my discussions with Edison staff, I agreed to review these items for my rebuttal
8 testimony. I address the two design related items below and the third item in the
9 "Miscellaneous" section that concludes my testimony.

10 Before going into the details of these items, I must emphasize that the maximum
11 potential impact of the revisions suggested by Edison is only 0.8% of Edison's
 requested annual residential revenues (and less than 0.3% of total revenues).

12 Moreover, none of the points made in my direct or rebuttal testimony about the
13 appropriateness or magnitude of the changes I propose are affected.

14

15 **Q.** Upon review of your analyses, have you made any adjustment to your rate design
16 to address Edison's complaint that your proposal under-collected proposed
17 revenues by 0.8%?

18 **A.** Yes, I have made a change. The source of the slight difference in revenue recovery
19 under my proposal and under Edison's proposal results from my use of detailed
20 billing distributions to compute revenue recovery and costs of service by usage level.
21 The use of these detailed billing distributions was necessary in my analysis because a

1 definitive cost-of-service study by usage level was not completed in the cooperative
2 process between the City and Edison. Those billing distributions did not segregate
3 water heat and non-water heat customers, an analysis Edison was able to perform
4 using different data. A reconciliation of the two data bases is the basis for the
5 adjustment I have made.

6 I have revised my cost-of-service and revenue recovery analyses to account for
7 summer and non-summer water heat usage. City Exhibit (ECB) 5.2 demonstrates that
8 my revised design collects Edison's entire requested revenue requirement. (I have
9 attached workpapers that show details of the revenue recoveries by usage level and by
10 region.) My revised residential rate structure reflects a slightly increased rate for
11 usage below 400 kWh. This revision avoids any criticism that my revised rates
12 would increase the impact on the high-use customer group about which Edison is
13 concerned, but it would have the effect of retaining a small part of the current
14 recovery inequity after the new structure is in place if my proposed structure is
15 adopted.

16 **Q. Have you revised the space heating portion of your rate design based on your**
17 **discussions with Edison?**

18 **A. Yes, to avoid needless distraction from the more important issues in this case, I have**
19 **made a small adjustment to the space heating portion of my residential rate design**
20 **proposal. The change does not acknowledge an error in my original proposal, but an**

adjustments shift revenue recovery in the manner Edison suggested to apply identical charges to both space heating and non-space heating customers.³

Q. Please summarize your revised rate design.

A. After making the revisions to space heating rates and non-space heating rates discussed above, and taking account of the water heating data reconciliation, my proposed rate design is as shown in the following table. The revenue impact differences of the revised design, when compared with my initial recommendation, are not significant.

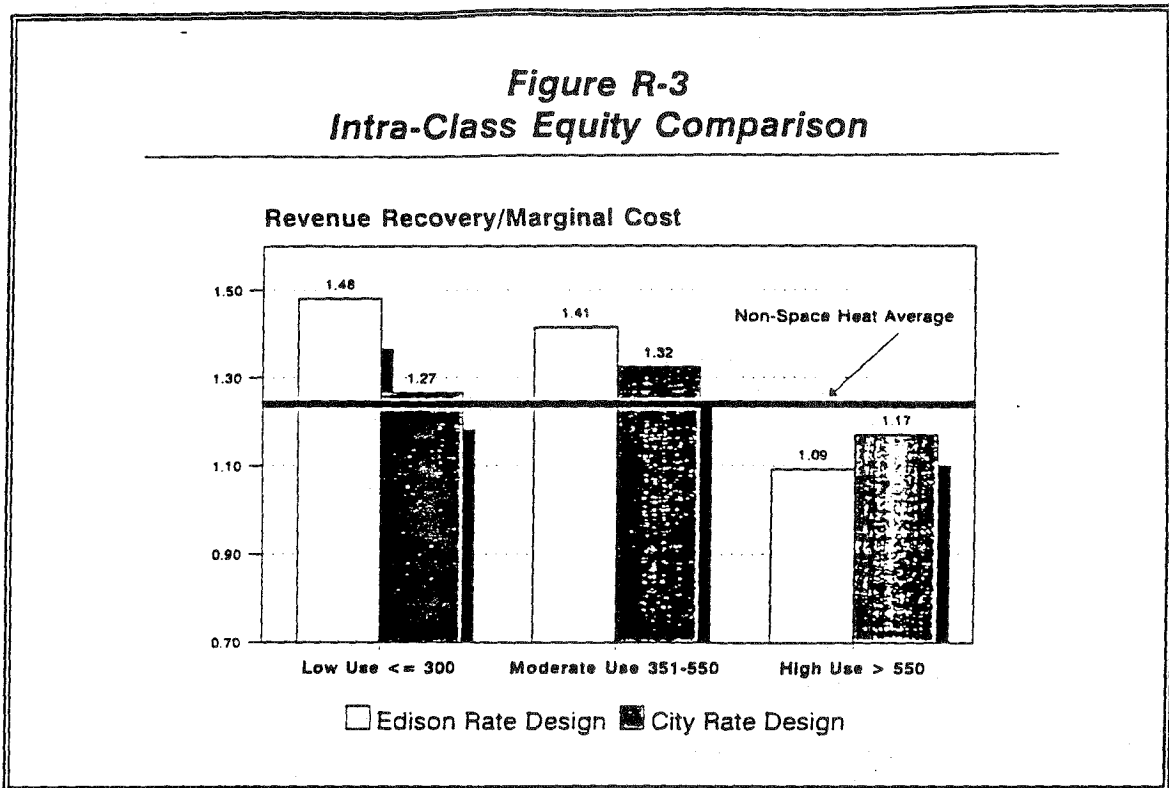
TABLE R-2
CITY RATE DESIGN PROPOSAL AT REQUESTED REVENUE LEVELS

| | Non-Space Heating | Space Heating |
|---------------------------------------|-------------------|---------------|
| Single-family Customer Charge | \$9.32 | \$9.32 |
| Multi-family Customer Charge | \$1.00 | \$1.00 |
| Summer Energy Charge 0-400 kWh | 9.755 ¢ | 9.755 ¢ |
| Summer Energy Charge Over 400 kWh | 14.2 ¢ | 14.2 ¢ |
| Non-summer Energy Charge 0-400 kWh | 9.755 ¢ | 9.755 ¢ |
| Non-summer Energy Charge Over 400 kWh | 9.755 ¢ | 5.4377 ¢ |

The average per kWh rate for my design as compared with Edison's design across

³ Edison's staff suggested that rate design components such as the multi-family customer charge of \$1.00 should be consistent as between space heat customers and non-space heat residential customers. Edison also suggested that revenue deficiencies from the lower customer charge to space heaters be made up from non-summer energy rates for usage above 400 kWh per month.

1 service.



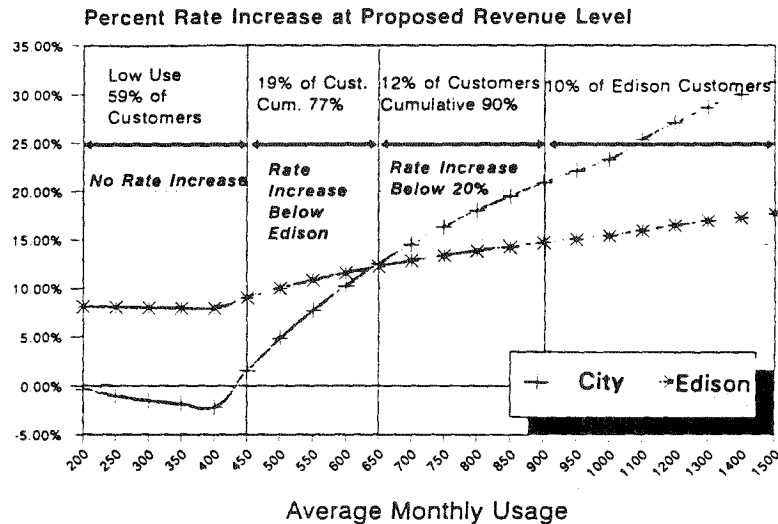
2 Q. Ms. Juracek's primary concern about your rate design proposal to eliminate
 3 inequitable recovery burdens on low-use customers is that it could cause "undue
 4 harm to other customers within the class." Do you share Ms. Juracek's
 5 concerns?

6 A. No. I acknowledge that my rate design results in significant rate increases for a small
 7 percentage of high-use residential customers. I directly addressed this issue in my
 8 direct testimony. However, my rate design does not result in "undue harm." Several
 9 of the reasons are outlined below.

- 1) Residential customers who use no more than 400 kWh per month (55% of Edison's non-space heat residential customers) will receive a rate decrease or no increase under my proposal. This low-use group includes most low-income residents (apartments and single-family homes), as well as other moderate users such as retirees and "bungalow" dwellers.
- 2) Residential customers who use between 450 kWh and 650 kWh (medium-use customers, who represent an additional 19% of Edison's residential customers) would experience no more than the increase proposed for them by Edison (0% - 12%). This group of customers includes larger apartments and suburban type homes.
- 3) Of residential customers who use 700 kWh per month or more (the highest consuming 20% of Edison's residential customers) the vast majority (about 90%) will see increases no higher than 20%, the approximate level of the maximum increase under Edison's proposal (18%). Only the highest use residential customers (more than 700 kWh per month, about 10%) would see increases over 20%.
- 4) According to Edison's cost-of-service study, the largest increase under my proposal will yield rates than the costs of serving the customers affected. Moreover, even after any increase, their percentage of marginal cost recovery level is less than that of other residential customers. These users also have more flexibility to modify their usage patterns, to invest in measures to control energy use, or to take advantage of Edison's time of day rates.

Figure R-4 illustrates the rate impacts of my proposed rate design as compared with the impacts of Edison's proposal. The graph shows that the number of customers who (under my proposal) would see rate increases higher than the rate increases they would receive under Edison's proposal is quite small.

Figure R-4
Percentage Residential Rate Increase By Usage



REDACTED

- 1 Q. Ms. Juracek criticizes the concept of installation charges based on comments
 2 about the demographics of communities in Edison's service territory and
 3 problems with fees for replacement of existing meters and services. Do you agree
 4 with Ms. Juracek's concerns?
- 5 A. Only in part. I agree that there are administrative, equity and efficiency concerns
 6 with lump sum fees for repairs or replacements when existing services or meters are
 7 damaged. These concerns are precisely the reason I included an "insurance"
 8 allowance for the replacement of meters and services in my customer cost and
 9 customer charge analyses. My proposed installation charge covers only new

REDACTED

1 construction and does not involve charges for replacement of existing meters and
2 services. I recognize that Staff's proposal does present the problem my proposal has
3 avoided.

4 I do not agree with Ms. Juracek's comments respecting alleged problems with
5 installation charges because of the diversity among communities in Edison's service
6 territory. Indeed, diversity in Edison's service territory is precisely the reason why
7 installation charges are appropriate under equity and efficiency principles. For
8 example, the overwhelming number of new residential installations has occurred
9 outside the City of Chicago, which has had limited new residential construction for a
10 number of years. Under those principles, City customers should not bear costs they
11 do not cause. The current monthly charge requires that they do, every month. This
12 means that under the current system of recovering installation costs, low income
13 customers incur costs for new customer installations arising principally from
14 construction in affluent areas.⁶

15 **Q. How do you respond to Ms. Juracek's criticisms of your proposal related to the**
16 **increased summer/winter differential?**

17 **A. Ms. Juracek's criticism of summer/winter differentials for usage above 400 kWh per**

18 ⁶ The proposed charge is not a significant portion of the cost of construction, even for
19 affordable housing, and should not affect new construction. If Edison believes the major
20 problem with installation charges are the impacts on affordable housing, the City would support
21 an Edison proposal that effects a waiver of the fee for construction of affordable housing where
excess distribution capacity exists.

month is curious, for a number of reasons:

- (1) The Commission's primary concern about Edison's summer/winter differential in Docket No. 90-0169 was that seasonally consistent users, such as low income customers without seasonal appliances like air conditioners, face increased summer bills even though their energy consumption does not vary seasonally. Since my proposal has no seasonal differential for usage below 400 kWh per month, those concerns are largely irrelevant.
- (2) The differential between summer and winter rates for usage above 400 kWh/month under my proposal is about the same as the differential under Edison's current design.⁷ All of these seasonal differentials are substantially lower than the marginal cost differential of 350%.
- (3) If the summer/winter differential is a major Edison concern, I am surprised that Ms. Juracek did not recommend use of Edison's budget billing plan. Under this Edison billing option, monthly bills can be leveled over a 12-month period. I obtained this information by calling 1-800-EDISON-1.

A summer/winter differential is not integral to my rate design proposal or the relief of the inequities I address. If Edison can develop another design which eliminates the inequities between low, moderate and high users without a seasonal differential, the City would be receptive to reviewing such a proposal.

Q. Please comment on the Ramsey pricing testimony presented by FEA witness Mr. Swan and endorsed by Ms. Juracek.

A. There is no dispute that pure economic efficiency considerations dictate pricing at marginal cost. However, once marginal cost pricing is abandoned, economic

⁷ Under my proposal, a properly weighted calculation of the overall summer/winter differential for average energy charges is 128%, not 150% as calculated by Ms. Juracek. The substantially greater usage below the 400 kWh per month level must be given appropriate weight.

1 efficiency does not justify a particular allocation of recovery burdens. Ramsey
2 pricing requires a deliberate deviation from EPMC or from marginal cost pricing,
3 based on inverse elasticity of demand. Where it is not possible to set prices at
4 marginal cost, equity considerations should control. Deviations from marginal cost
5 pricing to collect additional revenues are, from an economic perspective, analogous to
6 an imposition of taxes. Ramsey pricing amounts to setting taxes according to
7 elasticity of demand rather than on the basis of fairness and equity considerations.
8 For example, if low income customers have limited price elasticity because their
9 consumption is for non-discretionary lighting and refrigeration needs, Ramsey pricing
10 would dictate imposing a disproportionate share of the difference between marginal
11 cost and revenue requirements on these customers. This policy would be unfair and
12 very poor public policy. In sum, proposals based on Ramsey pricing should not be
13 accepted by this Commission.

14 **IV. REBUTTAL TO DENNIS KELTER**

15 **Q. Mr. Kelter asserts that you support, in large part, Edison's marginal cost-of-**
16 **service study. Is this characterization of your position accurate?**

17 **A. Yes, although there are significant portions of Edison's cost-of-service study with**
18 **which I do not agree. In particular, I emphasize that the City/Edison cost-of-service**
19 **review did not encompass interclass allocation issues -- issues such as differences**
20 **between customer classes in the value of reliability or in the cost of capital due to**

1 emerging competitive pressures. I also disagree with some of Mr. Kelter's comments
2 in his rebuttal testimony. On the other hand, I agree with Edison's argument that
3 Staff witness Mr. Lazare's recommended adjustments to transmission and distribution
4 costs, marginal fuel costs and generation capacity costs of Edison's study (which have
5 favorable implications for low-use residential customers), are not credible. I will
6 discuss my disagreements with Edison's cost-of-service study below.

7 Q. Can you summarize Mr. Kelter's rebuttal testimony criticisms of the refinements
8 to Edison's marginal cost-of-service study you recommend?

9 A. Yes. Mr. Kelter does not accept any of the refinements to Edison's marginal cost-of-
10 service study I recommend. He asserts:

- 11 (1) Non-coincident peaks on the day of the system peak are an appropriate basis
12 for allocating secondary distribution costs;
- 13 (2) Segregation of customer costs for new and existing customers is inconsistent
14 with marginal cost principles;
- 15 (3) Distribution cost adjustments based on actual physical conditions do not reflect
16 appropriate engineering judgement;
- 17 (4) Bad debt costs should be classified as a customer cost because of a previous
18 Commission decision; and
- 19 (5) Marginal costs cannot be computed on a City of Chicago/Outside City basis.

20 Q. Do you agree with Mr. Kelter's critique of your cost-of-service refinements?

21 A. For the most part, I do not. In understanding the differences of opinion between Mr.

1 Kelter and myself, the following synopsis of marginal cost principles can guide the
2 discussion and clarify the problems with Mr. Kelter's reasoning.

- 3 (1) Marginal costs are prospective in nature; therefore, sunk costs are irrelevant in
4 a marginal cost analysis.
- 5 (2) Marginal costs must be tied to the consumption activity which gives rise to the
6 cost.
- 7 (3) Marginal costs reflect the opportunity costs to society of alternatives which
8 must be foregone.

9 Before beginning my discussion of the faults in Mr. Kelter's positions, I note that I
10 have accepted certain Edison suggestions involving the allocation of local distribution
11 facility costs for multi-family customers and the replacement costs of meters and
12 services.

13 Q. How have you responded to Mr. Kelter's comments regarding your adjusted
14 allocation of local facilities for the multi-family subclass?

15 A. Mr. Kelter states that Edison uses class peak as an allocation basis because local
16 facilities "are typically sized by Edison's engineers to meet the demands of the
17 subclass being served." In fact, Edison's cost-of-service study does not use the actual
18 class peak, but the subclass peak on the day of the overall system peak. I adjusted
19 Edison's allocation of local facilities because of inaccuracies that can arise from use
20 of the subclass peak on the peak day rather than the non-coincident subclass peak for
21 the year, and because the impacts are significant for the multi-family subclass.

1 Notwithstanding this problem with Edison's cost-of-service study, I acknowledge that
2 neither approach reflects the consumption activity which gives rise to the marginal
3 cost. Therefore, to be conservative, I have revised my cost-of-service analysis to
4 reflect Edison's method, which increases costs (by less than 1.5%) to the multi-family
5 subgroup.

6 **Q. Mr. Kelter states that the distinction between marginal customer costs for new**
7 **and existing customers is arbitrary because the same distinction is not observed**
8 **for other cost items. Edison Exh. 29, at 14. Is Mr. Kelter's criticism consistent**
9 **with marginal cost principles?**

10 **A.** No. The appropriateness of distinguishing between new and existing customers for
11 meters and services, but not for other marginal cost components such as transmission,
12 distribution and generation capacity costs is based on the presence or absence of costs
13 that are sunk costs. To illustrate, if one customer increases load while another
14 decreases load, the distribution, transmission and generation cost increases needed to
15 serve one customer can be offset by the decreases attributable to the other customer.
16 This is absolutely not the case for marginal customer costs associated with new meters
17 and services. After Edison installs a new meter and service for a new house, the
18 installation costs are sunk. They cannot be off-set by customers leaving the system.
19 See City Exhibit 3.0, Technical Appendix at 20.

20 **Q. Mr. Kelter quotes a summary of testimony from the Commission's Docket**

1 **No. 87-0047 Order in arguing that it is inappropriate to apply a customer charge**
2 **based on marginal costs to some customers and a customer charge based on**
3 **historic embedded costs to others. Edison Exh. 29, at 14. Is that quotation**
4 **relevant to your testimony?**

5 A. No. The installation costs and replacement costs for existing customers in my
6 analysis are based entirely on marginal costs. The on-going costs are marginal billing
7 costs, the replacement meter and service costs are marginal costs, and the meter and
8 service costs for new customers are marginal costs. Mr. Kelter's argument appears to
9 be that all marginal costs must be in a single customer charge. Under the second
10 marginal cost principle noted above and the regulatory principle that assigns costs to
11 cost causers, that is not appropriate. Each marginal cost is related to the activity that
12 generates it; the costs should be recovered from charges associated with the cost
13 causing activity.

14 Q. Mr. Kelter states that the distinction between existing and new customers is "an
15 artificial timing distinction." Edison Exh. 29, at 15. Is this comment consistent
16 with marginal cost pricing principles?

17 A. No. The distinction between future costs and sunk costs is a basic and fundamental
18 tenet of marginal cost theory (the first marginal cost principle outlined above). What
19 happened last year in terms of installing meters and services is irrelevant from a
20 marginal cost standpoint. Mr. Kelter's attempts to define new customers on a
21 historical basis stating that "one could just as easily, and with as much logic, define

1 customers added during either the past five, ten or twenty years." Edison Exh. 29, at
2 15. This violates elementary principles of economic theory and should not be taken
3 seriously. Moreover, his attempt to brush aside the very real difference between new
4 and existing customer installations is wholly illogical. An assertion that the difference
5 between a live customer and a dead customer is "an artificial timing distinction" is
6 just as meaningful.

7 Q. Mr. Kelter criticizes your hypothetical involving the purchase of a new or an
8 existing house because "the existing home may need a new meter and secondary
9 tomorrow." Edison Exh. 29, at 22-23. How do you respond?

10 A. Mr. Kelter's testimony demonstrates why an allowance for replacing meters and
11 services is included in my cost analysis. I discussed this point earlier in response to
12 Ms. Juracek's remarks. Moreover, the allowance I included in my analysis accounts
13 for the type of dispersion Mr. Kelter describes; that is, the meter may need replacing
14 tomorrow or it may not need replacing for another 15 years. Simply because there is
15 dispersion in the remaining life of meters and services in no way invalidates my
16 approach.⁸

17 Q. Comment on Mr. Kelter's statement that refinements to Edison's density method

18 ⁸ My remaining life assumption was one-half of the useful life of a new meter, which in my
19 opinion is reasonable. If Edison presents evidence to show that the remaining life assumption
20 used in my analysis, which I reviewed with Edison staff, is inappropriate, the same approach
can be used to derive a revised "insurance" allowance.

1 of computing distribution capacity costs will not significantly alter the pattern of
2 relative rate recovery among various rate classes.

3 A. I agree that the adjustment to distribution capacity cost does not have a major impact
4 on cost allocation from an inter-class standpoint. However, the changes in
5 distribution cost can materially impact intra-class allocations in the residential class.
6 For example, on City Exhibit (ECB) 3.3, I show that in Edison's study, the
7 transmission and distribution cost per kW for the multi-family, non-space heat
8 subclass is 15% below the single-family, non-space heat subclass, while multi-family
9 transmission and distribution costs are 26% above the costs for single-family
10 customers among residential non-space heaters.

11 Moreover, Edison acknowledges that there are unresolved problems with its
12 computation of distribution capacity costs by density area. Edison Exh. 29, at 25. I
13 have addressed the problem by presenting a computation method based on the use of
14 actual location data to define representative customers.

15 Q. Mr. Kelter asserts that your approach for quantifying marginal distribution costs
16 is based on embedded cost information. Do you agree?

17 A. No. My analysis makes use of data on the physical attributes of Edison's system as
18 recorded in its plant accounts. I do not, as Mr. Kelter asserts, calculate embedded
19 transmission and distribution costs. Rather, I assert that existing conditions are the
20 best indicator of the type of facilities that would be added or replaced by Edison on a

1 marginal basis, and use data defining those conditions as the basis of my analysis.

2 Edison's method is based on defining marginal costs for hypothetical, representative
3 low-, medium- and high-density customers through surveys of Edison engineers. In
4 my opinion, my approach is reasonable, given the acknowledged problems with
5 Edison's current methodology.

6 **Q. Why do you question Edison's measurement of the quantities of distribution**
7 **equipment required for serving its hypothetical representative customers?**

8 **A.** According to information provided by Edison, its estimates of the physical quantities
9 required to serve the hypothetical, representative light-, medium- and heavy-density
10 area customers is based on a 1983 survey of selected distribution engineers. I do not
11 question the expertise of individual Edison engineers. However, the definition of the
12 hypothetical, representative heavy-, medium- and light-density area customers in the
13 initial survey was not clear, making application of that expertise difficult. In
14 addition, Edison's rate department overlays its own judgment in interpreting the
15 responses of the surveyed Edison engineers that were surveyed. Edison's
16 interpretation of the engineering data and survey responses does not seem logical.

17 Figure R-5 shows the estimates provided by the various Edison engineers regarding
18 the quantity of underground cable needed to serve single-family residential customers
19 in heavy-density areas and also shows the average of those estimates. The graph then
20 compares these figures to the quantity Edison used in its cost-of-service study.

REDACTED

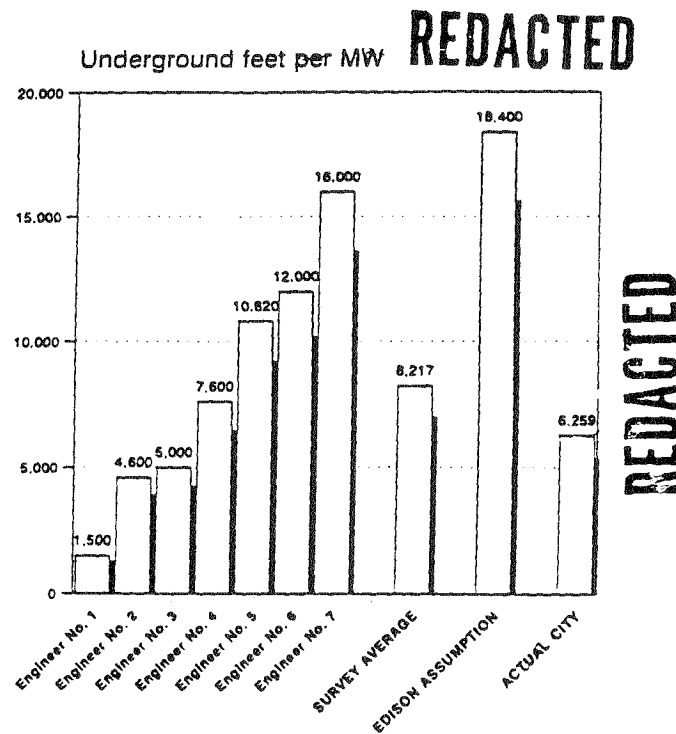
REDACTED

1 Finally, Figure R-5 shows the feet per MW quantity shown in Edison's plant accounts
2 for single-family residential customers in heavy density areas within the City.

3 The problems with Edison's survey are apparent from Figure R-5. As shown by the
4 graph, there are large unexplained differences among the estimates provided by the
5 Edison engineers. Despite the extraordinary range of estimates, the results of this
6 survey were used in Edison's cost-of-service study, after judgmental revisions were
7 made to the results by Edison's rate department. Figure R-5 shows that the
8 assumption Edison used in its cost-of-service study was significantly higher than the
9 highest estimate of any of its engineers and more than twice as high as the average of
10 all the estimates. The quantity Edison used in its study was also nearly three times as
11 high as the actual amount shown in its plant records.

REDACTED

Figure R-5
Edison Survey Used to Quantify Underground Cable
Single Family Heavy Density



- 1 Q. Mr. Kelter states that your comparisons of distribution miles inside and outside
 2 the City is irrelevant because "the use and capacity of any cable/conductor can
 3 vary from one type to another." Edison Exh. 29, at 20. Please comment.
- 4 A. My comparison of distribution mileage inside and outside of the City is based on
 5 dividing miles of wire by the City and outside City peak load. Therefore, my
 6 analysis does, in the aggregate, account for differing capacity characteristics.

1 **Q. How do you respond to Mr. Kelter's critique of your bad debt cost analysis?**

2 **A. As Edison's Response to Item No. 180 of the City's Eighth Data Request confirms,**
3 the Commission has not specifically addressed whether bad debt costs are, as Mr.
4 Kelter asserts, "an appropriate marginal cost." Edison Exh. 29, at 20-21. The
5 essence of my criticism of Edison's approach to bad debt costs is that Edison treats
6 bad debt as a marginal cost, even though under applicable economic principles it is
7 not.

8 A basic tenet of marginal cost theory is that marginal costs must be tied to the
9 consumption activity giving rise to the cost (the second of the marginal cost principles
10 outlined above). In the case of bad debt expenses, the activity which gives rise to the
11 cost -- customers who do not pay their electric bills -- is in no way related to the
12 presence on Edison's system each month of customers who pay their bills. No
13 amount of regression analysis or other statistical manipulations can change the fact
14 that bad debt costs are not created by customers who pay their bills. Mr. Kelter's
15 defense of Edison's existing cost assignment, reliance on the Commission's general
16 approval of Edison's cost studies as a "balancing" of issues, adds nothing to this
17 debate. Edison Response to Item No. 180 of the City's Eighth Data Request.

18 **Q. Mr. Kelter challenges your calculation of revenue recoveries for the City of**
19 **Chicago and outside City regions of Edison because you do not present**
20 **engineering data. Edison Exh. 29, at 25. How do you respond to his comments?**

7 Q. Are there any additional issues raised by your discussions with Edison regarding
8 calculation of replacement cost of meters and services that require changes in
9 your analysis?

12 1) Use of an after-tax rate rather than a pre-tax rate;

13 2) Inflation rate for the cost of meters and services over time; and

14 3) Inclusion of an "infinity analysis" to reflect the fact that meters and services

15 may have to be replaced not once, but many times.

17 **A.** In this type of analysis, by the time all adjustments are made for income taxes, final
18 pre-tax numbers are very similar to the after-tax results. Due to the relatively small
19 magnitude of the replacement cost factor (2.62% for services and 4.19% for meters),

1 the results of a pre-tax analysis are, in my opinion, adequate for calculating an
2 "insurance" allowance for repair and replacement of meters and services.

3 Edison suggests changing one component -- the discount rate -- but not offsetting
4 components such as the tax deductibility of meters or the gross-up for taxes on equity.
5 Use of an after-tax rate without making the other adjustments is a very conservative
6 approach. Applying an after-tax rate changes the discount rate from 10.59% to
7 9.11%. This has the following impacts on the replacement cost factors for meters
8 and services.

| | Pre-Tax Analysis | After-Tax Discount Rate |
|----------|---------------------|----------------------------|
| Meters | 4.19% | 4.66% |
| Services | 2.62% | 3.05% |

10
11 Despite the fact that an after-tax rate combined with a non-deductible assumption with
12 respect to meter and service cost overstates the replacement factors, I will accept
13 Edison's suggestion to assure that the factors are not understated and to keep the
14 focus on the real issue -- the inappropriateness of including new construction
15 installation costs in the charge paid each month by every Edison customer.

16 **Q.** Please describe the infinity analysis suggested by Edison staff.

17 **A.** I computed my "insurance premium" based on recovery of the full cost of meter or
18 service replacement over the assumed remaining life of the equipment. Edison

1 suggests that the analysis should include the cost of replacing the first meter, the cost
2 of replacing the replacement, and so forth ad infinitum.

3 From a theoretical perspective, if the costs of replacing replaced meters are included
4 in the analysis, so should the premiums collected after each meter replacement.

5 Thus, there is an infinite revenue stream to pay for the assumed infinite string of
6 replacements. The results, as one would expect, net out.

7 For example, in the case of services, if both an initial replacement and a second
8 replacement is considered and if the premium is levelized over the remaining life of
9 the service plus the full life of a second service, the replacement factor declines from
10 3.05% to 2.83%. Extending the analysis to successive replacements produces
11 increasingly smaller modifications.

12 **Q. Please discuss the inflation adjustment which Edison suggested that you should**
13 **make to the replacement cost analysis.**

14 **A.** I developed my factors on a real basis where costs, discount rates and "insurance
15 premiums" are all computed on an inflation adjusted basis. My reason for using this
16 approach was similar to the rationale used by Mr. Kelter on page 11 of his direct
17 testimony where he explains Edison's approach to customer costs: "We assumed that
18 changes in components of the customer cost in 1998 and 2002 would occur at the
19 same rate as changes in the general escalation rate. Therefore, the 1998 and 2002

1 customer costs stated in 1994 dollars are identical to the 1994 figure."

2 Edison suggested inflating the replacement cost component of the meters and services
3 without recognizing that the "insurance premium" will also inflate over time. I do not
4 agree with this assumption, however, to keep us focused and to be extremely
5 conservative, I have assumed that Edison will not recover inflation in the first five
6 years.

7 **Q. Please summarize the revision to your cost-of-service analysis due to changing the**
8 **replacement cost factors and revising the basis of allocation of local distribution**
9 **facilities within the residential class.**

10 **A. City Exhibit (ECB) 5.5 shows the revised cost-of-service analysis accounting for the**
11 **increased replacement cost factors and the allocation of local distribution facilities.**
12 **The cost-of-service analysis incorporated in City Exhibit (ECB) 5.5 was used in**
13 **evaluating the relative marginal cost recoveries presented earlier in this rebuttal**
14 **testimony.**

15 **Q. Does this conclude your rebuttal testimony?**

16 **A. Yes.**

EXHIBITS TO REBUTTAL TESTIMONY
OF
EDWARD C. BODMER

**TECHNICAL APPENDIX TO THE
PREPARED DIRECT TESTIMONY OF
EDWARD C. BODMER**